Tennessee Pollution Prevention Partnership Success Story

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Students Improve Carbon Footprints and Urban Air

The Member

USN is an independent K-12 school with an enrollment of approximately 1000 students and with faculty and staff of almost 200. Ours is a school community that challenges intellect in pursuit of independent thinking that strengthens character by encouraging personal responsibility, that sees arts and athletics as fundamentally complementary to academics, and that actively seeks to find its place in the wider world. As a middle school Science teacher, Amy Dortch has engaged her 6th grade students in a project to help them understand man's impact on the environment through teaching them about deforestation and carbon footprints.

The Story

Beginning fall semester 2008, the 6th grade Social Studies students at USN debated the pros and cons of deforestation in the Brazilian rainforest. Groups of students represented poor farmers, government officials, scientists, and corporate farmers and worked out a compromise to manage their ecosystem sustainably. Simultaneously, in a cross-curricular exchange, Ms. Dortch used a game in her 6th grade Science class called "Survivor Island," in which students are divided into teams and spend several class periods working as a community to meet their needs by cutting trees (represented by popsicle sticks), one of their main natural resources on the island.

They cut trees to build boats for fishing, to use for fuel, warmth and shelter, and to manage their farmland. The students experienced a personal connection to what really happened on Easter Island over 1200 years ago. Periodically, the students draw a "fate" card, resulting in a monsoon or other fateful event destroying their homes. When the students asked for more trees to rebuild, they realized that the trees were gone. This game led to a newfound awareness about deforestation and its impact. They asked, "How can we not cut down all the trees in our world?" and "How can we create a different future for ourselves?"

"Survivor Island" was followed by a unit on the Ecological Footprint, which is a measure of the consumption of natural resources by a human population. The students learned that if every person on the planet consumed resources as Americans do, we would need nine planets to provide all of the necessary resources. They calculated the level of each of their own Carbon Footprints, which is a measure of the amount of carbon dioxide produced daily through burning fossil fuels for electricity, heating, transportation, etc. Groups of 3 or 4 students worked together to create large foot-shaped pieces of paper on which they noted the results of their own carbon footprint calculations. They filled the rest of their "footprints" with action steps to decrease their personal carbon footprint. Displayed in a well-traveled stairwell leading up to the 6th grade area, these "footprints" caught the attention of students, faculty and parents, raising awareness of the entire USN community.

The Success

The combined units on Deforestation and Ecological Footprints have created a powerful connection to these students' own lives. When they learned that planting a tree can help offset one person's carbon footprint for a year, they were then given the opportunity to purchase any of three types of saplings native to our local ecosystem. From the sixth grade, 89 students purchased and planted 128 trees for the project in the fall 2008. In fall 2009, 83 more trees were planted at the end of the Deforestation and Ecological Footprint activities. Swamp Oak, Willow Oak, Eastern Redbud, Red Maple, and Bald Cypress were the species planted. Students learned that hardwoods sequester more carbon than conifers. As this project continues to be offered in the curriculum at USN, our community will increasingly reap long-term benefits in the reduction of Carbon Dioxide released into the atmosphere. Our upcoming young students will continue to gain a much greater awareness of the fragility of our planet.

The Pollution Prevented

Using the Department of Energy's Method for Calculating Carbon Sequestration by Trees in Urban and Suburban Settings, it was determined that the 211 seedling trees planted in 2008 and 2009 will sequester 1257 pounds of carbon dioxide each year while they are young trees. The amount sequestered will increase as the trees grow older.

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